

NBC Exhibition Hall Lighting Improvements



Rebuild Hawaii Quarterly Meeting
November 3, 2005

4/5/2006

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Project Goals:

- Provide better lighting to attract customers
- Provide more energy efficient lighting
- Minimize construction cost & effort

Design Tools:

- AGI32 lighting software to perform photometric calculations

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Sample Photometric Calculation



Lighting Technologies Studied

- Existing lighting system – (134) 400W metal halide w/ bi-level magnetic ballasts (baseline)
- Re-lamp with 360W metal halide replacement lamp
- Replace lamps (350W) and ballasts (magnetic) only (same fixture)
- 250W metal halide dual reflector fixtures
- T5HO linear fluorescent fixtures
- PL compact fluorescent lamp fixtures
- Optimized system – remove one row of 12 fixtures and re-space remaining fixtures

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New Lighting System Features

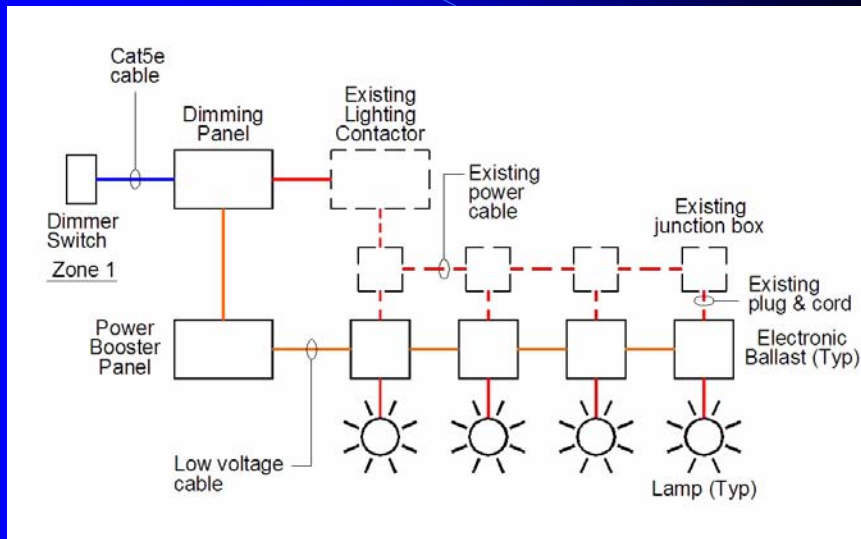
- 350W pulse start metal halide lamp
 - 35,000 initial lumens
 - 20,000+ average life
 - 3700 K color temperature
 - CRI 70
- Dimming electronic ballast
 - 100% to 35% light output
 - 363 watts at full power
 - better color and lumen maintenance versus magnetic ballasts



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Lighting System Diagram



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Energy Calculations

Fixture	Ave. FC	U/R	Total Fixture Watts	Number of Fixtures	Burn Hours @ 50% rated wattage	Burn Hours @ 100% rated wattage	Electricity Usage (kwh)	Unit Electricity Cost	Total Electricity Cost	Annual Electricity Savings	Cost	Simple Payback (Years)
Existing 400W MH	45	6.83	465	134	2122	1932	186,494	\$0.166	\$30,957.98	\$0.00	\$0.00	n/a
New 350 MH w/electronic ballast*	55	5.83	363	134	2122	1932	130,103	\$0.166	\$21,597.06	\$9,360.92	\$71,043.00	7.59

* Dims to 35% rated wattage

HECO Rebate: \$8,466.00 Payback: 6.7 years

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Project Summary

- Systematic approach to achieve our goals
- Used lighting software to establish baseline light levels and to compare different lighting technologies
- Used spreadsheet to compare energy savings and installation costs
- Installed sample fixtures to make final selection of the product

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Project Photos



Before

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After



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Craft & Gift Fair

